

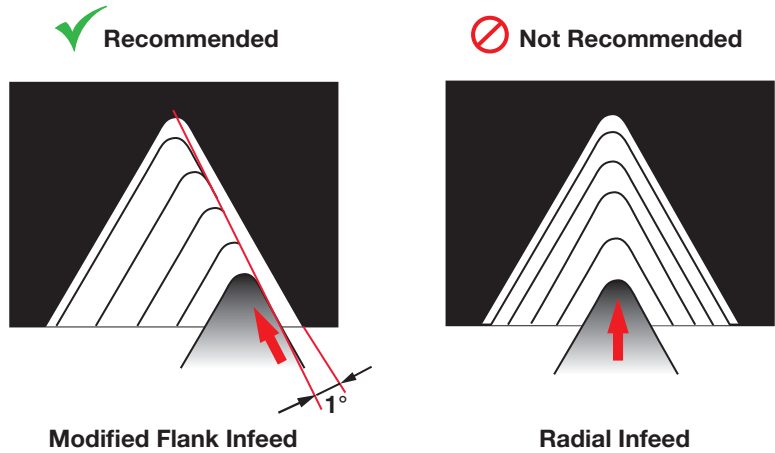
Threading Tools Speeds & Feeds				
Material	Grades	SFM	Feed	
			Infeed Per Pass	
			1st Pass	Last Pass
P - Steels				
High Strength Tool Steel	A2, D2, P20, H11, H13, S2, 01	50-150	.0150	.0010
Low Carbon	A36, 12L14, 12L15, 1005, 1018, 1020, 1108-1119, 1213-1215, 1513-1518, 4012, 5015, 9310	50-150	.0150	.0010
Medium Carbon	1040-1095, 1140-1151, 1330-1345, 1520-1572, 4023-4063, 4120-4161, 4330-4340, 4620-4640, 8620-8660, 8740-8750, 6150, 51000, 52100	50-150	.0150	.0010
M - Stainless Steels				
Austenitic	301-304L, 310, 316L, 321, 347	65-100	.0150	.0010
Martensitic	403, 410, 416, 420, 430, 431, 440	65-100	.0150	.0010
Precipitation Hardening	12/8, 15/5, 17/4, AM-350/355/363, PH13-8MO, PH14-8/MO	65-100	.0150	.0010
K - Cast Irons				
Ductile	A536, J434, 60-40-18	85-180	.0150	.0005
Gray	A48, A436, A319, Class 20, G4000	85-140	.0150	.0005
Malleable	A220, A602, J158	85-100	.0150	.0005
N - Non-Ferrous				
Aluminum Alloys	2014, 2024, 6061, 7075	100-200	.0200	.0010
Aluminum High Silicon	A380, A390	100-200	.0200	.0010
Brass/Bronze	Aluminum Bronze, Low Silicon Bronze	200-300	.0100	.0010
Composites	G-10, Fiberglass, Graphite, Graphite Epoxy, Plastics	250-400	.0150	.0010
Copper		100-200	.0100	.0010
Magnesium		100-200	.0200	.0010
S - High Temp Alloys				
Cobalt Base	Stellite, HS-21, Haynes 25/188, X40, L605	40-65	.0200	.0005
Iron Base	Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3	40-65	.0200	.0005
Nickel Base	Inconel 625/718, Inco 700, 713C, 718 Monel 400-401, 404, K401, Rene, Rene 41 & 95 Hastelloy, Waspoloy, Udimet 500 & 700	40-100	.0150	.0001
Titanium	Commercially Pure, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si, Ti-8Al-1Mo, Ti-8Al-4Mo	40-65	.0200	.0005

NOTE: Speeds and Feeds listed are estimated and will vary by application. These tools can be found on pages 505, 533-536.

Single Point Threading Roughing Infeed Depth per Pass														
Pass	Threads Per Inch													
	8	10	11	12	13	14	16	18	20	24	28	32	36	40
Pass 1	.0171	.0148	.0148	.0134	.0124	.0114	.0110	.0110	.0099	.0094	.0079	.0083	.0072	.0083
Pass 2	.0283	.0243	.0243	.0219	.0202	.0189	.0179	.0178	.0159	.0150	.0126	.0130	.0113	.0128
Pass 3	.0372	.0318	.0318	.0287	.0264	.0244	.0233	.0231	.0206	.0194	.0163	.0167	.0145	
Pass 4	.0449	.0383	.0383	.0345	.0317	.0293	.0279	.0276	.0246	.0231	.0194			
Pass 5	.0517	.0441	.0441	.0396	.0364	.0337	.0321	.0316	.0282					
Pass 6	.0580	.0494	.0494	.0443	.0407	.0376	.0358							
Pass 7	.0637	.0543	.0543	.0486	.0447	.0413								
Pass 8	.0691	.0588	.0588											
Pass 9	.0742													

Threading Tools Troubleshooting

Problems	Causes	Solutions
Built Up Edge	Cutting Forces	Increase the number of passes
	Heat	Use coolant or air blast and a coated tool
	Tool	Use a coated tool
Corner Breakage	Cutting Conditions	Reduce first pass Depth of Cut
	Program	If there is not thread relief, withdraw tool on an angle.
	Part	End in Thread Relief
Chip Wrapping	Tool	The tools should be at least 30% smaller than the hole diameter.
Excessive Flank Wear	Cutting Conditions	Check for excessive speed
	Part	Make sure workhardening did not occur from prior operation
	Tool	Use a coated tool



- Notes:
- A radial infeed is not recommended, a modified flank at 1 degree is recommended.
 - For increased length to diameter ratios or difficult to machine materials increase the number of passes by 40%.
 - Depth of cut per pass should not be less than .0003 inch.